

MICHIGAN FARMER

AND STATE JOURNAL OF AGRICULTURE.

GIBBONS BROTHERS, Publishers.

DETROIT, SATURDAY, JULY 21, 1888---WITH HOUSEHOLD SUPPLEMENT

PRICE, \$1.50 PER YEAR

VOLUME XIX.

"PRACTICE WITH THEORY AND SCIENCE!"

NUMBER 30.

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Agricultural.

OXFORD DOWN SHEEP.

A subscriber at Grass Lake writes us for information regarding the origin and history of the Oxford Downs. We published several articles on this subject during the past winter, and it is hardly fair to our readers who have read those articles to have them repeated so soon afterwards. The fact is in every number of the FARMER articles appear on various subjects which are unnoticed at the time. Suddenly a subject becomes a matter of interest to some of our readers, and they want the same information contained in the previous article republished. We say this by way of explanation of the reason why we have to repeatedly publish articles of the same tenor. The Oxford Down is the product of a cross between the Cotswold and the Southdown, and has a fleece resembling more the long wools than that of the Down breeds. The originators were evidently looking for a sheep which would give a carcass of the greatest size and mature early. They were breeding for mutton, and did not pay much attention to the fleece. After they had been bred for some years, the agricultural societies of Great Britain finally decided to allow them a separate classification as a distinct breed. The first year they were exhibited as a distinct breed was in 1852. Since it began to be imported into the United States some twenty years ago, considerable has been done to improve the quality of its fleece. English breeders finding that Americans demanded a better wool than sheep then were common to the breed. The Oxford was being imported show this very clearly, and not only grow more wool but better wool than they did ten years ago. The breeders in Great Britain do not publish any flock register, and this militates against the progress of the breed, as purchasers from abroad do not want to buy stock without some guarantee as to its purity of blood. In this country the Oxford is in increasing demand. The rams are used to cross upon grade ewes to produce early lambs, and for this purpose their use has been generally satisfactory. There are a few flocks of thoroughbreds in this State, the great popularity of the Shropshire inclining most farmers to their use in the direction for which the Oxford is most useful. It would be a great advantage to this breed if a reliable flock register was established in England. Were that done the demand from the United States would increase wonderfully.

"IMPORTED" STOCK.

A correspondent in Oakland County writes for some information as to what constitutes "imported stock," referring specifically to Shropshire sheep. He also asks our opinion as to the honesty of selling Shropshires as "imported," the purchaser believing that the term "imported" to mean that they were brought from England, while he finds afterwards that they were really bred in Canada. We should consider the term "imported," in the case of Shropshire sheep, to mean that they were bred in England, the home of the Shropshire. If bred in Canada and imported into the United States, they are certainly regarded as being of less value to the breeder than if they were bred in and came from England. It would not be acting in good faith to allow a purchaser to be misled by the term "imported." American bred and Canadian bred Shropshires are of equal value where the breeding is similar, while the English bred invariably command more money. In purchasing Shropshires, the buyer should always insist upon a statement as to who bred them and the location of the breeder. A little care in this respect will soon put an end to the business methods our correspondent complains of. This only gives emphasis to what we have frequently

urged in the FARMER—never buy stock from a party who is not strictly honest, or who does not know all about the stock he is selling. Buy from responsible parties and those breeders and importers who are known to be honest.

SANDY FARMS.

There are so many degrees of quality in sandy farms that it is troublesome to define what is really meant when the term is used. A fertile sandy farm—one that has been successfully farmed—is called a loam; but let a few unfavorable seasons pass, with loss of clover, and frequent plowings resulting from it in efforts to get the land into condition to seed again, and the farm soon loses its genteel title of "loam," and passes as "Jones' sand lot." Indeed, there may be single fields on the farm so unfortunately fate d by frequent failures to seed, that these rare the farm very low, as showing what the other fields are subject to, and may become. There are again sandy farms, so low in fertility that only those with the faintest tide to being called farmers will attempt their cultivation at all. Such may once have been considered fair land, and have furnished a good living to the owner in his earlier days, but change of ownership, or a series of unfortunate seasons, have wasted its unsteady fertility, and it goes down with the whole tract of like quality. There is little hope for this latter lot of farms, while cut up in small parcels of 40 to 80 acres. There should be at least 300 acres in a farm, and double that amount would be better. Such land is now similar to the worthless jack pine land, and perhaps no better except that it lies in a more favorable climate, where it is subject to less vicissitudes of fatal character.

The experimentation upon such lands, begun by some of the faculty at the Agricultural College, will be watched with very great deal of interest. Bulletin No. 37 rehearses the plan of operation at Grayling, in Crawford County; 18 acres are planted, or prepared to be planted to a variety of grasses and crops to test what varieties seem suitable, and what fertilizers are beneficial. The fact seems to be pretty fully comprehended that it is idle to attempt to raise a paying crop at the outset, but the effort is wisely in the direction of reclaiming the land, so that future farms may possibly be made in that sandy region. The 80 acres for experimental purposes was donated by the Michigan Central R. R. Co. It is fenced in by a substantial board and barbed wire fence, and the central 40 acres is left in its natural state to note the effect of natural forest growth, when fires and cattle are excluded. The 20 acres at each end of the 80 acres have been very thoroughly prepared and sown as above stated. This 40 acres of raw soil is supplemented by eight acres of older land which has been under tillage a few years. It is stated in the bulletin that the land was plowed seven inches deep, after having been grubbed out and cleared up. I cannot help but believe that a better showing would come from five inches plowing such soil rather than seven. The two inches of the seven turned on top of the furrow, is probably no better soil than that 20 feet below it; while the two inches on top of the undisturbed land contain about all that is to the soil, which can be counted on as an improvement on any other two inches below it. This top soil must be the basis or beginning of regeneration looked for; but when it is buried beneath five inches of raw soil, there is little hope of good to the land coming from it. The only redeeming feature in plowing at all, in my opinion, is that it prevents the crop from drying up by making a more porous seed bed, and perhaps this depth of plowing was deemed necessary on that account.

The outcome, whether of success or failure, will be watched with exceeding interest by observing farmers, for many of the questions asked on that experimental sand are awaiting an answer on other farms whose condition is verging on that under scientific trial. It is not expected that any experiment, or any person, can inform anxious questioners how to secure a stand of clover with uniform readiness, nor how to preserve crops from the effects of a severe drought; but there are attending conditions that ought to be studied, for some of them we know tend to mitigate the effects which follow when the severest failures are met, and these are compared with only moderate ones. The truth is already well settled in the minds of all experienced farmers that clover must come in the rotation more or less frequently, and around this question of seeding centers more of interest to farmers and farms, than all the other questions combined. Give us a plan of seeding sandy land to clover with certainty, and the rest is easy. A bushel of grain or a ton of hay can be produced cheaper—giving due credit for the quality of the bushel and the ton—than in heavy clay or prairie soil. Sheep will keep fat on short feed on sandy farms and be thin in flesh in the rank pastures of heavy land. Less tilling and lighter teams make the saving quite conspicuous, while the uniformity of the crop during a term of years brings the average annual yield up to it not above the farms on heavy soil. The natural tendency of heavy soil is to grow heavier to a disadvantage, while the light soil, under such treatment as clover makes possible, becomes heavier and improves the quality. The elements seem to have conspired against success on sandy farms for a few years, but the swinging of the pendulum in the other direction may have begun to bring sandy farms to the front again. A. C. C.

THE AGRICULTURAL COLLEGE OF MICHIGAN.

Experiment Station—Bulletin No. 37.

THE JACK PINE PLAINS.

The large amount of light sandy soils in some of the northern counties of Michigan, which do not appear to respond favorably to ordinary methods of tillage, seems to call for investigation and experimental inquiry. Some persons doubt the possibility of their successful cultivation, and are disposed to scoff at all attempts in that direction. The fact that many persons have settled on these lands for homesteads, and after a few years have abandoned their claims and gone elsewhere for permanent homes, seems to countenance the doubt about their agricultural value. The hundreds of abandoned homesteads give sad evidence of misdirected labor and disappointed hopes. Some have asked, why raise expectations which shall cause others of small means, and who are ill able to bear the loss of their little capital and years of fruitless toil, to embark in an enterprise which will end in disastrous shipwreck? The answer is obvious: If these plains are incapable of cultivation, then in mercy to the homesteader and men of small means, make it clear and plain that the plains are worthless for farming, and thus prevent their entering upon a hopeless undertaking; if previous failures have been in consequence of wrong methods of tillage, kinds of crops, etc., then make this plain and point the way to successful farming on the plains. The homesteader can not bear the expense or spare the time for such experimentation; the government having hundreds of thousands of acres of these lands on its hands can well afford the means for thorough investigation of this subject.

THE PROBLEM STATED.

The question for present consideration is, how to bring these lands into profitable cultivation by such methods of tillage, and the use of such manurial materials as are within the reach of every farmer of moderate means. It does not include the use of stable manure for the reason that this can not at present be obtained in sufficient quantity to supply the needs of the plains. No one need doubt the capacity of these sandy soils to produce crops if a sufficient supply of stable manure can be obtained. The first question is, how to raise the crops on these lands that shall furnish the stable manure. The present inquiry does not take account of possible results by the use of commercial fertilizers and imported manures. There is little question that with the free use of superphosphates affording abundant supply of potash, phosphoric acid and ammonia, large crops can be produced on these plains. The lavish expenditure of money for the production of crops without consideration of the cost is as worthless as it is extravagant. Such commercial fertilizers are beyond the means of the pioneer and homesteader, and hence outside the present inquiry.

The problem briefly stated is this: With a light sandy soil of very porous quality, in a northern climate subject to late frosts in spring and early frosts in autumn, and liable to midsummer drought, with no fertilizers except manure, salt and plaster, can any methods of tillage or kinds of crops bring these plains into profitable cultivation for ordinary farming, stock raising, or fruit production?

With what the soil now contains, and what plants may accumulate from the rain and air and return to the soil when plowed under for green manure, and with the aid of the cheap mineral manures so abundant in this State, can we bring these sandy soils into profitable cultivation?

MATTERS HISTORICAL.

For many years I have given thought and study to this problem of the sands, and in lectures and articles called attention to the subject. Many persons have aided and encouraged me in this investigation. The effort has been made in our Legislature to establish an experimental station on the plains. When the Hatch bill became a law it was felt that the time had come to take up this subject in a practical way. A farmer's institute had been held at Grayling, Crawford Co., in which farming on the plains occupied most of the time and thought of those present. When it was determined to establish an experimental farm on the plains, the State Board of Agriculture fixed upon Grayling as the place because it is in the heart of the jack pine lands, is readily accessible by railway, is near a large deposit of marl, the people take a lively interest in the experimental work, and the Michigan Central railroad offered to donate 80 acres of jack pine land for the experimental farm.

THE EXPERIMENTAL FARM.

The tract of land donated for this purpose is described as the west half of northeast quarter of section seventeen, town twenty-six north, of range three west.

It is characteristically jack pine plains, the timber being mostly Pinus Banksiana, "jack pine," some scattering trees of Norway spruce, scarlet oak (dwarf), buckberry bushes, dwarf cherry, sweet fern, trailing arbutus, and many wild grasses (sedges). The ground is nearly level; the fire has run over most of it at frequent intervals, but the central part less than the north and south ends. The farm, both as to soil and the natural products growing on it, is considered a fair average of the jack pine

plains. It nearly touches the railroad at the southwest corner, and the experimental field of twenty acres at the south end of the farm is plainly visible from the car windows. The experimental field of twenty acres at the north end of the farm adjoins the village of Grayling. This field is nearly ready for seeding.

FENCING.

The entire farm is surrounded by a substantial board and barbed wire fence to exclude cattle. The fence is placed in the center of a ten foot strip of plowed ground to prevent the spreading of fire from outside sources to the farm. The central forty acres is left substantially in original forest to test the effects of excluding stock and preventing fires.

THE SOUTH EXPERIMENTAL FIELD.

April 19, 1888, contracts were let for clearing and grubbing twenty acres on the south end of the farm, everything to be removed that would be in the way of the plow; also to plow the field in a substantial manner to the depth of seven inches. After the ground was plowed it was harrowed with a spring tooth sulky harrow, then rolled with a heavy roller, then again harrowed, the roots and trash raked into windrows with a spring tooth sulky horse rake, which did the work very rapidly and satisfactorily. After burning the roots the process of rolling, dragging and root raking was repeated till the ground was thoroughly subdued and compacted. This mechanical treatment of the soil was considered very important from the conviction that the loose and porous condition of this soil is often the cause of failure in crops.

On the last day of May and first of June the field was seeded by means of a disc roller drill. Twenty plots of one acre each were separately seeded. The plots run north and south in the field, being nearly four rods wide and a little more than forty rods long.

MANURES APPLIED.

The field was divided across the plots into five equal zones for testing the influence on all the plants used of certain manurial matters. The south zone was treated with marl from a lake near by, using six tons to the acre, which was incorporated with the soil by harrowing and rolling. To the next zone plaster was applied at the rate of 200 pounds to the acre; to the next zone 300 pounds of plaster and 300 pounds of common salt; to the fourth zone 300 pounds of salt, and the last zone received no manure, for purpose of comparison. It will thus be seen that there are one hundred separate experimental plots of one-fifth of an acre each in this field.

After the seeding the roller was again passed over the whole field. I regret that a heavier roller was not used.

On the east side of this field near the fence a narrow strip was sowed and planted to quack grass.

THE NORTH FIELD.

At the north end of the farm twenty acres have been cleared, grubbed, plowed and sowed in the same way as the south field, and are now nearly ready for sowing. Marl will be applied to a part of this field, and plaster on many of the plots. Some seeds not used in the south field will be sowed on the north field, so that the number of plots used experimentally will be about thirty.

THE VILLAGE FIELD.

The ground on the experimental farm is all "new breaking." It is probable that land long under cultivation and more thoroughly subdued may give different results with some or all the plants used in these experiments. For this reason a field of eight acres in the outskirts of the village was rented of Mr. Brink for experimental uses. This field had been under cultivation for three or four years, and the roots and trash well worked out of the soil. The field was plowed and fitted for crops and seeded the 17th of May, the following seeds being placed in plots beginning at the west end of the field and passing eastward: Timothy, alsike clover, Hungarian grass, blue lupines, yellow lupines, cow peas, field peas, vetch, yellow branching sorghum, sorghum and Kentucky blue grass, Kentucky blue grass, white mustard, millet, tall fescue, rye grass, red clover, alfalfa, white clover, spurry and rye. To these will be added seven leaved turnip and New Zealand spinach.

THE CLIMATE.

Climatic conditions limit the field of experimentation at Grayling, and many plants that promise good results must be omitted on account of frost. The cow peas, for example, that was sowed May 17, gave promise of good results, but the frost of June 1 was very severe on this plant. It seems that we can not depend upon the use of plants that are easily out by the frost. A hardy, quick-growing plant that will at the same time accumulate a large amount of vegetable matter is especially needed for that locality.

In order to determine some of the agricultural-climatic conditions, a set of soil thermometers to show the temperature in the soil at distances of 24 inches, 12 inches, nine inches, six inches and three inches below the surface of the soil, have been placed in position near the village field in charge of Mrs. Brink, who will take observations on soil temperature three times a day for the four months from June to September. A corresponding set of soil thermometers are in position at the College, and a comparison of soil temperatures at

corresponding depths at Grayling and Agricultural College may develop facts of interest and value.

The chemical composition of the soil of the jack pine plains is of interest in studying this problem. The average composition of six soils taken from different points in Crawford and Iosco counties, in which analysis shows a close similarity of composition, is exhibited in the following table:

Sand and silicates insoluble in acids.....	94.32
Oxide of iron.....	1.89
Magnesia.....	.08
Lime.....	.37
Potash.....	.85
Soda.....	.27
Sulphuric acid.....	.01
Phosphoric acid.....	.08
Organic matter.....	2.16

Capacity to hold water by capillarity 33 per cent.

The depth of the water line below the surface at Grayling is from 15 to 18 feet.

This preliminary bulletin is issued for the information of the public in regard to the nature and scope of the experimental work at Grayling in the department of chemistry. It is only begun, and it is too soon to ask "What shall the harvest be?"

R. C. KEDZIE,
Chemist of Experimental Station,
AGRICULTURAL COLLEGE, JUNE 16, 1888.

EXPERIMENTAL AGRICULTURE.

What French Savant is Doing and the Results which have Attended his Experiments.

From our Paris Correspondent.

It is some time since I have assisted at the public lectures of M. Georges Ville, or visited his field experiments at Vincennes, outside Paris. This enthusiastic professor of mineral manures is on the shady side of fifty; of middle height, hair silvery, quick eye, with a delivery eloquent and clear. He recalls much the likeness of Napoleon III, who was his personal friend, backed up his views on scientific farming, and had the necessary fields for conducting the experiments, as well as a laboratory, placed at his disposal. M. Ville being wealthy gives his services gratuitously.

Professor Ville maintains that the function of the soil is purely mechanical: viz—to sustain the plant and to act as a cupboard for its food. Nine-tenths of the latter is composed of air and water, the remaining tenth being composed of mineral matters, such as lime, phosphate, nitrogen and potash. Nitrogen, the professor maintains, is necessary for the plant as oxygen is for man. Less sound is his assertion that plants absorb their nitrogen and ammonia directly from the air. M. Mantz has shown that the roots only of plants assimilate ammonia directly and freely. Beyond this, all is conjecture. It was the logical consequence of the theory of M. Ville to grow food and industrial plants in a soil devoid of all organic matter, and next, by the addition of the mineral food that each plant specially required, to make plants thrive luxuriously on any soil, no matter how barren. All experiments conducted under common conditions, ought to produce common results. But in agriculture, climate or meteorology, which the experimenter cannot control, will cause serious fluctuations in results, and in a less degree so will a soil not kept free from weeds. The latter are now more voracious feeders than the cultivated plant, a quality peculiar to all parasites, and besides appropriating nourishment, they shade out light, heat and air.

In his laboratory, Professor Ville has several boxes filled with ordinary sand, which has been burned, then washed with distilled water, and re-calculated. This was the ideal soil sterility. He sows wheat, hemp, etc., in this sand, watering it with weighed doses of sulphates, lime, nitrates, phosphates, etc., and the plants are vigorous and luxuriant; so much for the laboratory. Now for the field, which is vast, and divided like a chess board into a series of squares of an area of four perches each, chiefly under wheat, beet, maize, vines, vegetables, fruit trees, etc. There is always one square left unmanured for contrast to serve "the looking on this picture and on this" comparison. As each plant has in its composition more of one mineral food than another, M. Ville compounds its inorganic repasts for the season, never giving more than what analysis indicates as necessary for the plant's complete development. Thus, there cannot be many cruises left to enrich the soil from a dietary so rigidly measured. In case of the vine, clover and leguminous plants, potash-food predominates; for beets, fruits, wheat, hemp, rye and co., nitrogen; for maize, buckwheat, sugar cane etc., phosphate. It is out justice to leave the experimental plots thus treated leave in point of result nothing to be desired.

But in practice, not nursery farming, how stands the question? M. Ville lays before you his correspondence with his disciples in the Colonies, Belgium, France, etc., who have followed his scientific manuring for years, and with success. On the general issue there is plenty of evidence that many soils, if maintained in a good mechanical tilth, and the crops be sown in line, hoed, and kept free of weeds, will continue to yield year after year satisfactory returns, while presenting no signs of exhausted fertility. There is something to be done in the study of plant fertilizers. For example, we know almost for a certainty that phosphoric acid and potash added to the soil will produce little efficacy if nitrogen does not already exist in that soil, or be artificially added in the form of sulphate or nitrate ammonia. Azote arguments the per-

centage of sugar in beets, while in the case of cereals, it increases the starch in the grain. Professor Ville follows a sound theoretic principle, and which is sanctioned by experiments other than his own, that mineral manures set with potency and profit only when studiously combined. As for example; nitrogenous substances with phosphate and potash. That sets free the nitrogen for the roots of plants. Here, that element is life, while in the chemist's retort it is death.

PROSPECTS OF THE AMERICAN DAIRYMAN.

[Paper read at the annual meeting of the Michigan Dairyman's Association, held at Adrian, February 14th to 17th, by Robert Gibbons.]

Such is the subject assigned me by your worthy president, probably because he thought an editor ought to know everything—even the future. While not pretending to the gift of prophecy, I make bold to put on record a few statements regarding the progress and future of dairy husbandry in the United States, and more especially in our own State of Michigan. This paper will not be a technical one, but deal only with the general aspects of the business, as at present conducted, and its future development.

Dairying can only exist to a certain extent and in any country in connection with improved agriculture. It depends for its success upon well cultivated farms, producing grains and grasses of superior quality, experienced and intelligent farmers who will give the requisite attention to the industry, improved breeds of cattle especially adapted to its requirements, the most approved appliances; and last, but by no means least, a prosperous and cultivated people who can appreciate, and are willing and able to pay for a high grade of the products of the dairy. The necessities to the business will grow up with it and aid in its development. It is the demand for an article which induces people to invest their time and means in its production.

The moment you embark in the production of an article for which there is neither demand nor sale, that moment you can predict positive failure. In the early history of the State, cheese factories or creameries had not an existence, nor could they have been sustained. When the era of pioneer farming had passed, when agriculture in all its branches began to work toward a higher plane, when the great west began to be utilized as the grain-growing portion of the Union, when the farms cleared by the early settlers began to show signs of exhaustion, then stock raising and dairying began to assume greater importance in our State. The history of Michigan in this respect is a faithful reproduction of that of New York, from which so many of its best settlers came. It is not many years since the Genesee Valley was the great wheat-growing section of the Union, but that time has passed, and passed forever. Dairying, orcharding, gardening and wool-growing are carried on where once wheat-growing was the great reliance of the farmer. I do believe Michigan will for a long time, if ever, give up wheat growing; but I feel sure that it will be carried on in such a manner as to produce as large yields upon a third less ground—that the field which now grows twenty bushels to the acre will produce thirty, while the area devoted to pasturage and meadow will increase. In this improvement, dairying and stock-raising will perform important parts. Under their influence, exhausted acres will have their fertility renewed, and their increased productivity will enable them to furnish food for a still larger number of live stock, rendering the farms more remunerative, in every way, to their owners. This system of mixed husbandry seems especially fitted to Michigan. She cannot grow grain in competition with the great west, nor can she raise cattle and sheep as cheaply as they can be grown on the great ranches of the south and southwest, but by combining the two, and carrying on dairying and orcharding, she can make each one of those industries more profitable to her people than if she were successful in only one.

At present dairying is only in its infancy in this State. I know there are large amounts of butter and cheese made yearly, but as yet the business is in rather a crude condition. Organization is needed. Improved processes should be more generally known and practiced. Better cattle should be kept. Remember it is upon the productivity of the dairy cow that the dairy industry depends for its success. The cheese factory or the creamery will take your milk and cream, and with proper manipulation produce good cheese and butter. But if your cows do not produce more than they consume it is safe to say you will never get rich keeping them. The first thing therefore needed to make dairying successful is good cows. I suppose I ought, right here, to work in a puff for some special breed, but as I am only looking to the future prospects of the industry and not to the sale of some special breed of cattle, I will have to forego that which is generally a part of the proceedings of these conventions. All the same, I have a special breed of cattle which I believe will be finally selected by dairymen as best suited to their requirements. Now you will want to know what it is. At the risk of stirring up a controversy with the admirers of other breeds, I propose to describe it. It is the breed which will give you the greatest amount of milk of good quality, for the food consumed, and continue to do so for the

longest time. As to name, it has not yet been honored with one; and may be the Jersey, the Holstein-Friesian, the Ayrshire, the Shorthorn, or the Guernsey, or a combination of one or more of them. It is the cow of the future—the cow evolved from the needs of the business and developed by the dairyman himself, the cow whose value is based upon the foundation of actual performance. There is no one breed to-day which fully meets all the requirements of the business; but the improver is at work, and with time and perseverance it will be reached. The sale will determine its claim beyond dispute. The improved dairy cow is the great need of the dairyman to-day, and he must give the subject intelligent thought and act up to his best judgment. How many dairymen to-day know just what their cows are doing? They probably know what the whole herd produces; but how about each individual cow? Is one good cow making up the average for two poor ones? There is a certain point at which cows fail to return you a profit. Do you know what that point is? If it requires, say an average of fifteen pounds of milk per day for nine months to enable a cow to pay cost for a year, must you not get a better yield and for a longer time to make a remunerative investment? If she produces less than this you are losing time and money. Sell her at once, and try to get a better one. It will be better to have one cow less than to keep one that is eating her head off. The foundation of your success must be your cows, and every one should be watched carefully to see that she is doing her share to make the business pay.

Having got your herd in proper shape, you must follow it with good care and attention to their wants. It is very easy to spoil a good cow by improper care or feeding. And the successful dairyman will never carry a single cow more than he can supply with good and abundant food.

With good cows, intelligently cared for, and the best methods and appliances, you are in shape to extend your markets at home and enter into competition with others for a share of those abroad.

In cheese-making, there is abundant opportunity for indefinite extension. Americans, as a rule, prefer cheese with just as little age as possible and have it for market. But there are those in our large cities whose tastes differ in this respect, and considerable quantities of foreign cheese of peculiar quality are brought in to meet the demands of those who have educated themselves to appreciate the flavor of French, Dutch, Swiss and Italian cheese. There are many varieties of these, and some are known the world over. They command high prices, and the supply is never large. In this direction there is room for great expansion, and it would not in any way interfere with the ordinary product of our factories. There is no doubt; but that the consumption of cheese will grow from year to year, and that it will increase in advance of the growth of population. The export trade is also capable of great extension. To-day the United States are furnishing about one-half of the cheese imported into Great Britain, which is the largest consumer of this article. Her people, and especially the working classes, use large quantities, it taking the place with them of meat to a large extent, as being cheaper. If our people consumed a proportionate amount, it is safe to say we would not have any cheese to export. In the English markets, American cheese stands fairly well—much better than American butter. In price obtained it is surpassed by the average obtained for French, Australian, Holland and Danish cheese, is about even with Canadian and surpasses Swedish. Considering the immense importations into the United Kingdom, therefore, it has maintained its position extremely well, especially as the average obtained for the product of other countries is increased by the high price obtained for specially prepared cheese for which they are famous. Therefore, it is evident that with a knowledge of the methods necessary to produce these special grades of cheese, the average would be much higher.

There is another point I wish to refer to while on this subject: Would it not be possible to make and put on our markets a small class of cheese—ten or fifteen pounds in weight—of fine quality, which would find its way to consumers without having fully one-third added to its cost? These cheese could, I feel certain, be sold readily in large cities—and small ones, too, for that matter—and to the certain extension of the demand. At present, the demand for cheese is handicapped by high cost, and small quantities are purchased which generally dry up and harden before they are consumed. Thus, cheese sold for twelve to thirteen cents costs the consumer from sixteen to eighteen cents in Detroit, and the small piece he buys generally hardens before it is eaten. These conditions make him curtail his purchases, and are directly against your interests as producers. Small cheese would command a premium of one or two cents per pound over large ones, and would, therefore, be remunerative to the producer. I throw this out as a suggestion for members of this Association to think over. It is one which often strikes me when purchasing cheese in the Detroit groceries, and I would like to see it tested.

Another point: I think the manufacture and sale of skim-milk cheese is a positive detriment to the industry. It is indigestible. (Continued on eighth page.)

The Horse.

Dates of Trotting Meetings in Michigan for 1888.

Detroit.....July 24 to 27
 Detroit.....Sept. 4 to 6
 Centerville.....Sept. 18 to 21
 Lansing.....Sept. 24 to 28

A NEW WAY TO BREED TROTTERS.

In the last issue of the *Western Sportsman* a correspondent, J. L. Day, of Chicago, writes:

"I have bred my pacer mare Kate Allen by Almont Jr. (Bestick), dam by Crim's Black Hawk, etc., to the thoroughbred stallion Amadis by Rivoli, he by Revenue and he by Imp. Trustee; dam by Lexington; 2d dam by Imp. Glencoe; 3d dam by Imp. Hearsford, etc. It is in the air for a 2:30 trotter or pacer. To get one, in my opinion, you must depend upon the thoroughbred blood, and of the very best at that. Should I get a colt, I flatter myself that I can trot or pace a five-mile dash, and do it in good style, too. People are tired of the old-time racing—best three in five—and want a change. To give it them, we must change the breeding of our stock, in my opinion. What do you think?"

This is a radical change from the accepted theories of those who are either engaged in breeding trotters or studying out the principles upon which breeding can be conducted so as to insure speed at the trot in the progeny. A trotting bred sire is always relied upon to get trotters, those who like thoroughbred blood in the trotter preferring to have it come in through the dam. This latter theory we regard as the correct one, and should prefer the thoroughbred to be one or two crosses back. While the thoroughbred has speed and gameness, it must be remembered that the running instinct is strongly bred into him, and the question is how shall the first two qualities be secured for the benefit of the trotter while the latter is eliminated? It looks to us as if the only way in which the running instinct can be overcome, to which must be added careful handling while young. A good deal of the ability to trot fast is the result of skillful handling, or education, as has been proved time and again in the case of trotting bred horses. But Mr. Day is doing what is the correct way to settle a theory—giving it a practical trial. Theories are so frequently knocked out by solid facts that it is best to have them backed up by practical results before relying too strongly upon them. All the same, however, we are afraid that Mr. Day will not get those two minute horses.

It Makes a Difference.

Race-horses, says a writer in the Melbourne (Australia) *Sportsman*, are about the only animals or "commodities" which gain by depreciation. If you write and tell a man that his hunter or his bull or his ram is no good you stand a fair chance of getting a black eye. But if you apply the same to his race-horse just prior to the publication of the handicap for a race he will probably invite you to look on the Pommery when it is amber colored. I remember an owner and I have no doubt he has a very vivid recollection of the same circumstance himself) making a little mistake of this description with me. He asked me at Flemington, and speaking of a horse then in his stables, who subsequently won a big race, he spoke of him as being:

"A rotten cur, sir; can beat anything in the world when he likes to race, but you can't depend on him; and the way Mr. (the handicapper) is treating him is something scandalous. I wouldn't back him for the race if he had only six stone to carry. Besides, between ourselves, he can't stay, and he's a bit of a roarer."

Well, the horse I refer to won a big race some little time afterward, and a year or so later on was offered for sale. Just prior to the auction I had occasion to write about his defects. "Couldn't stay," "a rotten cur," and "a non-stayer." Bidding at the sale was anything but brisk, and he was ultimately knocked down for "a song"—about a fifth of what he should have fetched if he was really sound. Next day the trainer called on me. "Who told you my horse couldn't stay, etc.? Do you know he would have fetched six hundred guineas but for your remarks?" "You told me so yourself just before the ——— Handicap in 1882, and you were particularly anxious that I should say so in print, but I fortunately forgot to do so then."

"Ah, but that was a very different thing. Then he was on the turf; now he's on his way to the stud. Owners don't always tell you the truth about their horses on the eve of a handicap."

Just so. But I suppose they do when they are anxious to sell their horses. In other words, it is perfectly justifiable to say a horse is rotten to mislead the public and the handicapper, but it is a heinous crime to call him unsound when there's a probability of a profitable sale being effected.

Keep Calm.

"What is the best thing for a fellow to do when he finds himself seated behind a frightened horse?" was asked of Zumstein, the liverman, to-day.

"Well, that's a question. The best thing to do is to check the horse, if possible, on the very first impulse, for if a horse once gets started running away to one man—no, not even two men—can hold the animal in check."

"Suppose the driver hasn't got his wits about him sufficiently to remember about checking the animal before it is too late and the horse gets started, what is a sensible person to do then?"

"Well, as to that there is a great difference of opinion among horsemen. Some drivers claim that the best way is to steer the animal against something—a wall, a fence, or something like that. If generally caused the horse to stop before he gets to the obstruction."

"But don't you think that's a rather dangerous way of stopping the horse? Isn't he liable to go right along unimpeded if the obstruction?"

"No, it most always works. About the only danger is in the horse taking a very sudden turn the other way. But in my opinion the very best thing to do is if there is a good open road, is to stay right with the

vehicle and let the horse run till he's tired. At all events, it's the wisest plan to remain in the vehicle till the animal is stopped in some manner. The very worst and most dangerous thing one could possibly do in case of a runaway is to jump out of a vehicle. Stick to the vehicle, keep as cool as possible and use a little judgment, and there's not much danger of the outcome. The percentage of horses that are prone to run away—naturally addicted to the habit of making such breaks—is very small. Then there are horses that you can't scare, others that are easily scared into running away, and still others that won't run away, unless the provocation is very great. I don't keep a horse after he's been known to run away."

"Is it advisable in a very desperate case to shoot the fleeing animal?"

"Well, now, that's a very hazardous thing to attempt. Buffalo Bill might do it every time, but unless a fellow is a very good shot it would be dangerous to shoot at a running horse. The reason so many runaways end disastrously is generally because the drivers lose their heads. A little judgment before the horse gets started at full speed will generally prevent a runaway."—*Cincinnati Times.*

Horse Gossip.

The five-year-old pacer Roy Wilkes defeated Jewett in the free-for-all pace at Milwaukee, taking one heat in 2:18½.

W. R. KENDRICK, of East Saginaw, has sold O. L. Thompson, of Bismark, Dakota, two Shetland colts, one and two years old, for \$500. They are to be shipped to Dakota.

The gelding Charley Hilton, by Louis Napoleon, has been sold by W. H. Crawford, of Lexington, Ky., to Col. Bradshaw, of Texas. His record is 2:17½. His dam's breeding is unknown. The price is reported at \$3,500.

The training stable of Wm. M. Rue, of Danville, Ky., was burned July 10th, and 22 of the 42 horses in it at that time were burned. The value of those lost is put at an average of \$800 per head. There was no insurance on the building or horses.

QUEEN VICTORIA has a farm on which a large number of thoroughbreds are bred, and disposed of as yearlings. At the last sale held in June, 26 head were sold for a total of \$12,335, the highest prices ever realized. One of the colts brought \$2,600, nearly \$15,000.

MR. ALEXANDER, of Woodburn, Ky., sent four mares to California to be bred to Electioneer. As a result Miss Russell, dam of Maud S, has dropped a bay filly, Ricard, dam of Paracost, a bay filly, Lady Russell, sister of Maud S, a bay colt, and Nutria, sister of Nutwood, has a bay filly, all by Electioneer.

ONLY 17 horses out of the Detroit 63 entered in the three colt stakes, to be trotted for during the fall meeting, failed to make good the second payment; nine in the J. L. Hudson stake for two-year-olds; five in the Hotel Cadillac stake for three-year-olds; three in the B. Stroh Brewing Company stake for four-year-olds.

JEFFERSON & SEAMAN, of Lexington, Ky., who purchased the young stallion Bell Boy from S. A. Browne & Co., of Kalamazoo, for \$30,000, have concluded there is too much money in him for them to have invested in a single animal, and will sell him at auction on July 31st, at Lexington. Senator Stanford, the breeder of Bell Boy, thinks he will bring \$70,000.

THE American-bred horse Brown Prince, a son of Lexington and Alice Carmel, has a colt out of Hollythorn by Holywood, called Shillelagh, which won the Royal Hunt cup at Ascot this season, with 11 to 2 against him, and his owner is said to have won over \$10,000. That ought to put up the price of American thoroughbreds.

SENATOR HEARST is not popular with the book-makers, it seems. He is said to be one of the few stable owners who freely pass the tip to his friends when he thinks he has a sure winner in his lot. He is said to have told a number of his acquaintances that it would be worth while to back Bainbridge for a little spare money. Back him they did at 15 and 20 to 1, and some of the Monmouth gamblers were hard hit in consequence.

MISS A. L. WILSON, daughter of the well-known horseman, W. H. Wilson, of Cynthiana, Ky., has been engaged by Joseph Carrington, of the California Breeder and Sportsman, as assistant editor, a post for which she is said to be well qualified, as for several years she has conducted the extensive indoor business of her father, keeping books, answering correspondents, tabulating pedigrees and compiling his catalogues. Miss Wilson is well educated, and a general favorite with the citizens of Cynthiana, as well as the numerous visitors who enjoyed the hospitality of Abdallah Park.

FAVONIA, the mare which beat Rosalind Wilkes at Hartford, is curiously bred from the standpoint of those who oppose thoroughbred blood in the trotter. Her sire was Wedgewood out of Woodbine, by Koelucko, a thoroughbred son of Sir Archy, by imported Diomed. Favonia's dam was Alexander's Abdallah, out of Lightsome, thoroughbred daughter of imported Glencoe; 2d dam by imported Trustee. The race was a hard one. The first and second heats were won by Favonia in 2:50, 2:10½, but Rosalind outlasted her, and was first at the wire in the fifth in 2:50½. It is also a fact that Favonia lost her two performers sired by Wedgewood, although many of them are trotting bred on the dam's side. How facts will knock out theories sometimes.

THE Paris *Kentucky-Citizen* says: Shields has a remarkably intelligent specimen of the equine species with his circus, and an animal that will be certain to "give away" any liverman who neglects him when put in his care. An instance proving this occurred here last Saturday. The horse was brought to Paris and put in Bowden & Edwards' livery stable by the trainer, who went out and returned in an hour or two. Going to the stall he addressed the horse by name and asked: "Have they given you any water?" A bow gave answer in the affirmative. He was then asked if he had been fed, when a shake of the head indicated "No." "Well," asked the trainer, "have they rubbed you down?"

Another shake of the head gave a negative answer. A colored man named Aleck, one of the stable attendants, was looking and listening with wild-eyed and open-mouthed astonishment, and when the colloquy (if we may use that term) was ended, exclaimed: "Well, well, 'fore God, dat dar boss got sense like people, an' tells de truth. Bet yer life he got 'tended to while here, he he ain't he'll give me 'way every time!"

The Farm.

NOTES ON FRENCH AGRICULTURE.

From our Paris Correspondent.

French farmers have extensively reduced their breadth of land under wheat this year, in the sense that they have set apart areas for the cultivation of silo-maize. Maize is a valuable adjunct to stock-feeding, and requires no exceptional attention in point of culture. The middle of May is the epoch when it is sown, and then the last nipping frosts of spring will have passed. Maize requires a fair average soil; above all one well manured, and of the latter, well-rotted farmyard manure has not been applied, it can be supplemented by any fish, dried blood, or ground meat manure; wool refuse and bone dust are excellent, so are nitrate of soda and superphosphates. The seed should be sown in lines, to secure uniformity of germination, and facilitate hoeing and weeding. As crows and pigeons are very fond of seed maize, so much so that many farmers have been compelled to abandon maize growing from their deprivations, the best plan to keep off such tormentors is to make a vigorous use of the gun for some days at the expense of the invaders, and hang up their carcasses to discourage the others. Seed wheat about 2½ cwt. per acre, which will produce a mass of forage of 80 tons, to soil green or silo.

M. Labourene has carefully studied that enemy of maize, the *Botys nubilalis*. It is a small caterpillar which, on leaving its egg stage, attacks the infant leaf and stem by tunnelling through its tissue. There may be several insects in the same stem, but never more than two between the knot spaces. In the natural insect the leaf is reddish grey, and the female pale yellow. The *Botys* attacks also hops, hemp and millet. Remedy: Avoid cultivating the maize on the same soil several years in succession, and burn the old stumps in autumn.

M. de Schlanstein draws attention to his experiments demonstrating that everything which fetters the growth of the sugar beet leads to develop in the plant a tendency to run to seed. Thus, when the seed is covered too deeply, when night frosts strike the young plants which have just appeared above ground, or if later a frost checks the vegetation, all these factors will contribute to produce beet liable to run to seed. Further, seed not sufficiently matured produces plants with a tendency to stalk.

Belgian farmers are noted for their success in potato culture. This they attribute to careful selection of the tubers intended for seed, a selection made in autumn when tubers are carefully stored in a dry and airy cellar. Tubers intended for seed are never kept in silo, never are they planted if moist or having sprouted. In France the tubers are never planted till they have sprouted. A tuber four ounces in weight, and having few eyes is the model for selecting; if too large, it is waste; if too small, the shoots will be slender and dwarf; if too many eyes, there will be too many stems, too many roots and too many tubers.

M. Parmentier was born at Montdidier, in the department of the Somme. It is to him that France is indebted for the introduction of the potato, as Sir Walter Raleigh claims the honor of doing the same for Ireland, on his estate near Youghal. It would perhaps be more accurate to say Parmentier popularized the propagation of the potato; he was the Peter the Hermit, since he went about the kingdom preaching up the advantages of the tuber. This was a century ago. His native town had already known him with a statue, but it was only justice that Parmentier should not forget a benefactor, whom they at one time nearly ridiculed to death. Parmentier bought a field close to the capital, he there cultivated his potatoes, and obtained from the king permission to have soldiers guard the field, when the potatoes were in flower, as the Parisians plucked flowers and stalks for nosegays. But he connived at their stealing the tubers, and by so doing converted the incredulous Parmentier presented Louis XVI. and Marie Antoinette with bouquets of potato flowers, that they wore at a ball; later he sent tubers, which were served at the royal table. He was at last victorious. Penitent Parisians have just erected a statue to him on his one potato field.

The Academy of Sciences of Paris has been since a long time occupied with the role of nitrogen in vegetation. In what shape do plants receive it; if from the soil, by what combination; if from the air through what agency? The difficult question has been treated by Berthelot, Gantier, Drowin, and Schloesing. It does not appear that the solution has advanced much further than the famous experiments of Boussingault. All agree upon one point, that a soil destitute of humus and devoid of vegetation, can neither produce nitrogen nor absorb it from the atmosphere. Less clear is the hypothesis that microbes, in other words the agents of fermentation, play a fixed role in uniting the elements, or bringing about the changes to produce nitrogen compounds. Another fact acquired is that the plant neither by its roots, nor by its leaves, absorbs free nitrogen. But the latter can indirectly minister to vegetable nutrition by the air, as when electricity forms nitrate acid and ammonia, and both compounds can be washed by rain into the soil; or the circumambient air can, by entering the porosity of the soil, yield its nitrogen to effect new combinations. And no matter in what form the latter may present themselves, they are the roots above all, which are the vehicle for their entrance into the economy of the plant. The phenomena of nitrification are located in the organic matters of the soil.

The arrangements for the agricultural exhibition next year in this city, are assuming concrete shape. It will of course be an agricultural show—thrown open to the world. The newer features will be: A greater attention bestowed on congresses. Each department of farm industry that most conspicuously engages present and likely future attention will be prominently dealt with. These subjects will be fixed upon in advance. Questions relating thereto will be sent to the leading governments to have answered through their respective chambers of agri-

culture. When the replies are received the French government will have a summary of them made in French, English, German, and Spanish, and suggesting the most points for discussion. Authorities taking part in the discussions can either have their oral or written speeches simultaneously translated.

Potato Fertilizers.

Potatoes require a different fertilizer than some other crops; a manure that will be soluble and ready to be assimilated at once as plant food. The short period of time in which the tubers are formed, not usually over two weeks, requires a fine and rotted manure that will afford food for the plant with great rapidity. Hence, soluble commercial fertilizers, if they are properly prepared, make extraordinary yields of potatoes. The best yields are where the barnyard or stable manure is applied the previous fall. It will be rotted by spring and give a greater yield of potatoes than if applied then. Potatoes need potash, phosphoric acid, and nitrogen in the fertilizers, and unless the soil has sufficient of them already, the application will pay handsomely.

Light manuring does not pay in growing this crop so well as heavy manuring, and large and frequent application of fertilizers is the secret of successful potato culture. On heavy clay soils any manure, rich in nitrogen, makes a poor quality of potatoes. Potash and phosphates improve the quality. Nitrate of soda, superphosphate, and potash make an early and good potato. Do not cultivate late in the season, nor cultivate too deeply. There is more injury than good done by late culture.—*Farm and Garden.*

Coppers as a Fertilizer.

Considerable inquiry has been made recently concerning the fertilizing qualities of coppers, as favorable reports have come from France, and these have prompted experiments. Coppers has been recommended from abroad as a valuable dressing for different crops, and remarkable results of experiments made on the other side are shown, to convince the doubting American fertilizer manufacturers. It is claimed that coppers prevents mildew, and a very weak solution destroys moss and the spores of mildew. An explanation of the favorable effect of coppers is that it increases the power of the plant for assimilation; there is a large percentage of fibre and nitrogen, but the increased crops are not due to a supply of sulphuric acid by the coppers, as superphosphates containing an abundance of the acid, proved to have less effect.

The Connecticut Agricultural Station report, just received, cites one instance where coppers was used as an experiment in this country, and it results in an increased yield of 600 pounds of corn, or 22 per cent, from the employment of 32 pounds of coppers per acre. The chemist of the station concludes from this investigation, and the evidence which comes from France, Japan and Germany, that experiments should be continued, although he does not believe that coppers will be found generally hopeful. He points out that it will be injurious to plants when applied in too large quantities, but that it may be found of advantage on rich garden land that has had an abundance of other fertilizer material for many years.

This is a subject which concerns all of the agricultural states, and it is surprising that experiments have not been made on the ground allotted by each State for such purposes. So far, they have depended almost solely upon foreign sources for information, instead of demonstrating in a way on their own territory whether coppers is a good material for crops or otherwise. It is time that such work was commenced, so that the public could be enlightened upon the dark subject, and a chance opened for increased business in the article.—*Oil, Paint and Drug Reporter.*

Lime in the Dairy.

Henry Stewart, in the *Country Gentleman*, says: Quicklime is an indispensable in the summer dairy as ice. It is exceedingly absorbent of moisture, taking up one-third of its weight of it without having any appearance of moistness, and only falling slowly to a fine dry powder. A peck of freshly burned lime will thus absorb nine pounds of water, or the enormous quantity of four quarts; and when one realizes what it is to take so much water from the air, floor and walls of a dairy-room 10 by 12 feet square and nine feet high, as has been done in a week, he will have some idea of the value of lime in this respect. In such a dairy-room, I have made the air so dry by the use of lime that the cream became cathery, and ventilation to admit some moisture became requisite. This applies to the shallow-pail setting, which is indispensable when there is no ice; and in a dairy of this kind, operated in the summer, the air cannot help but be moist, because the air admitted by necessary ventilation must necessarily contain considerable moisture.

Supposing a careful dairymaid goes into his milk-room on a warm day, and finds a close and disagreeable smell, which really arises from the evaporation from the milk in the pans. The milk is perhaps put in the pans at 80 degrees of temperature in a dairy of 65 degrees. The warm milk throws off vapor in which there is a peculiar odor, sometimes called "animal odor," and which is really much like (if not precisely the same) that of the perspiration from the skin of a cow, and this fills the dairy. The good, careful dairymaid throws open the window, saying, "It wants some fresh air"; but he does not think that the air outside is 90 or 95 degrees of temperature, and holds three or four and a half ounces of water in suspension per 1,000 cubic feet of it. And so he opens the window, and as the fresh air pours in and feels cool, although it is so warm, because it is cooler than his heated face and is in motion, he thinks, but wrongly, that he is doing something useful. The air pours in and pours out, and every time it is changed in the room it leaves two ounces of water (the difference between the moisture of the air at 95 degrees and 65 degrees) on the walls and everything else in the dairy. The next day the walls are saturated, and if of stone or brick and plaster, are trickling with water like a heavy dew. Then the mold appears; the red fungus which grows in round spots upon the cream in moist air, and the blue mildew (*Penicillium glaucum*) throws up its miniature forest. The dairy

man wonders and is in despair. All he wants, however, is a little lime. If the dairy-room is 10 by 12 by 9, and thus holds 1,000 cubic feet of air, a pound of lime—fresh from the kiln or dried in a hot oven—will take all the excess of moisture out of it, and keep it dry enough for two or three weeks, when it should be changed for fresh lime.

Did you know the remarkable offer made by The Aultman & Taylor Company, Mansfield, Ohio, to all buyers of Threshers, Engines and Saw Mills? Read their advertisement in another column. You will save from \$10 to \$500 by buying their goods, which, for reputation are unequaled in the market, and besides you have the satisfaction of dealing direct with the manufacturers.

Agricultural Items.

A PAMPHLET recently issued called "The Resources of Dakota," gives the cost of producing an acre of wheat in that territory as \$5.95. The yield at a low average, is twenty bushels to the acre.

THE New England Farmer says the cheapest room farmers can get in their barn is in the basement. A basement barn is best for keeping stock comfortable in cold weather. For convenience in saving manure the basement barn is by far the best.

NITRE was formally obtained from the soil under old buildings, and so it impregnates earth under stables and barns that a load of it drawn upon the fields will do more good than an equal quantity of barnyard manure as usually made.

IN six months of the current year, Tennessee farmers have used 3,600 tons of commercial fertilizers. Perhaps the statement that the wheat crop of Tennessee is much finer than had been expected, an average of twenty bushels per acre being looked for, may be thus accounted for.

THE Kansas Farmer in a late issue presents reports from seventy counties in that State which go to indicate the present wheat crop will be the best since 1884. The harvest is over, and the average all over the State is estimated at not less than twenty-two bushels fully equal to the best yet known. The corn acreage is the largest ever reported, and the crop is estimated at not less than two million bushels.

THE exceptionally fine crops of potatoes grown in Manitoba are due in part, it is alleged, to the long days. It is possible to read the newspapers till after nine o'clock at night, and during the three months of May, June and July, they have over 200 hours more daylight than in the southern part of this State. And potatoes grow wonderfully under such conditions, light being the great factor in growth.

The highest price paid in the world for cattle sold on the hoof, is in a country where they never raise an ear of corn, and don't feed it to their cattle. The harvest is over, and the average all over the State is estimated at not less than twenty-two bushels fully equal to the best yet known. The corn acreage is the largest ever reported, and the crop is estimated at not less than two million bushels.

Most farmers greatly underestimate the value of a coat of paint on their farm implements. These tools are a great item of expense, and ought to be taken good care of. Exposure to the weather is more destructive to them than the wear they get. A coat of paint preserves the materials, fills up the cracks and joints, and keeps them looking new. Half a dollar's worth of paint will go a good ways on them, and can be applied on a rainy day, with more profit than going to town.

OVER-RIPE grass is frequently damaged in the mow through not being well cured as that which is cut earlier. To prevent it from becoming "smoky" it should be cut when there is no dew or rain upon it, and put into heaps, in which it should stand twenty-four hours or longer, that the juice that is in the stalk may sweat out. Then give it an hour or so of sun and air, and it will be found to be more thoroughly dried through than it would be by two days of hot sun. While this method of curing may not make it more nutritious or more easily digested than any sun-drying, it will prevent it from being smoky, and it therefore will not be so bad to feed to horses that have the heaves, or to cows with tuberculosis.

"I can heartily say to any young man who is wanting good employment, work for Johnson & Co., follow their instructions and you will succeed." So writes an agent of B. F. Johnson & Co., 1009 Main Street, Richmond, Va., and that's the way all of their men talk.

The Poultry Yard.

Disinfectants.

Since it has come to be realized that the prevention of diseases that are communicable is within our control to a certain extent, a great deal of attention has been given to all classes of articles that are believed to neutralize the spread of contagious diseases. First of all we must bear in mind that nothing can supplant a thorough airing, ventilation and sunlight. While draughts are to be avoided, we must have frequent changes of air. Then comes the necessity of all the details of cleanliness, which must be observed at all times. Years ago all looked on chloride of lime to be the first and principal disinfectant; since then other compounds have come in for their share of attention. Some have proven to be good in specific cases, and all do some good; but in the main we must admit that chloride of lime has no superior for general use. It is much more pleasant than the carbolic acid compounds. It is often necessary to use so freely in your coop that the odor becomes perceptible. Often spreading on a dish and dampening with a little strong vinegar adds to its effect. Corrosive sublimate has recently come into extensive use, where its intense poisonous quality can be carefully guarded. A drachm dissolved in a gallon of lukewarm water and sprinkled over the walls and floors of your coops attacks and destroys the spores and is thorough in its effect. You will find that chloride of lime one part and nine parts plaster of paris is good for disinfecting masses of organic matter, vaults, etc. It is cheap and can be used where there is cholera or roup in your runs. A mixture of two ounces of corrosive sublimate and a half a pound of sulphate of copper in a gallon of water is a radical disinfectant.

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The number of eggs laid is less at the commencement and end of life. With hens, for instance, the number laid is less in the first and fourth year than in the second and third, and after the fifth year they frequently cease laying, though there are exceptions to this rule.

To produce early broilers for the spring market you need an early maturing fowl with size and flavor. A cross of pure-bred Light Brahmas and colored Dorkings produces large birds, maturing early, fattening easily and hardy. They will begin to lay at five months.

FANNY FIELD says, in the *Prairie Farmer*: After chickens are weaned, do not be in a hurry to crowd them into the poultry-house. Let them remain in the nursing coops until they outgrow them; then either let them take to the trees, or colonize them in roosting sheds made A-shape and open at each end. If fowls are troublesome in your locality, make wire screens doors for each end, and close the shed securely after the chickens go to roost. If there are neither owls or chicken-hooters in your neighborhood, I should advise the trees as roosting-places for the chickens until cold weather in the fall. For two seasons our chickens roosted in the apple trees in the orchard from the time they outgrew the coops until the latter part of October, and we never had better "luck" with our young stock. We didn't drive the chicks into the trees; the coops were placed under the trees in the first place, and the chicks took to the trees when they got ready.

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Always gives a bright natural color, never turns rancid. Will not color the Buttermilk. Used by thousands of the best Creameries and Dairies. Do not allow your dealer to convince you that some other kind is just as good. Tell him the BEST is what you want, and you must have Wells, Richardson & Co's Improved Butter Color. Three sizes, 50c, 50c, \$1.00. For sale everywhere.

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are the Purest, Cheapest, Strongest, and most Durable Dyes ever made. One (the package) will color 1 to 4 pounds of Dress Goods, Garments, Yarns, Rags, etc. Unsurpassed for Dyeing, Staining, and all Fancy Dyeing. Also Diamond Paints, for Gilding, Bronzing, etc. All color fast, with full instructions and sample card mailed for 10 cents. At all Druggists.

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OVER-RIPE grass is frequently damaged in the mow through not being well cured as that which is cut earlier. To prevent it from becoming "smoky" it should be cut when there is no dew or rain upon it, and put into heaps, in which it should stand twenty-four hours or longer, that the juice that is in the stalk may sweat out. Then give it an hour or so of sun and air, and it will be found to be more thoroughly dried through than it would be by two days of hot sun. While this method of curing may not make it more nutritious or more easily digested than any sun-drying, it will prevent it from being smoky, and it therefore will not be so bad to feed to horses that have the heaves, or to cows with tuberculosis.

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Horticultural.

THE STRAWBERRY IN 1888.

The present season has been a rather unfavorable one for this delicious fruit, owing to excessive rains and cold weather during its period of development. But Mr. J. T. Lovett has been keeping watch of some of the newer sorts, and records his observations in *Orchard and Garden*. He says:

Monmouth fully sustained, everywhere I saw it, what was said of it a year ago, fully as productive as the Crescent, much larger in size, firmer, earlier, and with the same bright color of fruit and healthful, enduring plant. In fact it excels Crescent in endurance of plant and as I saw it at Thos. G. Zane's and Parry's, it was even more productive and averaged nearly the size. A valuable feature of it is that unlike most varieties it maintains its size throughout the season, also its firmness and fine flavor, which is owing to the fact that its foliage is as fresh, clean and vigorous at the close of the season as it is at the beginning. A power possessed by no other strawberry I have ever known. Mr. Zane complains that the variety has not been treated justly by not being figured of larger size. As it possesses also a perfect blossom, it is far superior to the Crescent and all other early berries, and as an early sort, fills the entire soil.

Haverland Seedling proves unusually true to the disseminator's description, being of the form and appearance stated in the illustration and description. Plant vigorous and enormously prolific, but it is too small and soft for a profitable market variety.

Either re-named old varieties or reproductions of the same, we have Truitt's Surprise (Seth Boyden), Anna Forrest (Monarch of the West), Peerless (Cumberland Triumph, also known as Jumbo by some), Ontario or Great Ontario (Sharpless), Hoffman's Seedling, I am convinced, an improvement upon the old Numan's Prolific or Charleston, being larger and longer in form but otherwise very like it in plant and fruit—hence valuable at the south, but inferior to many popular sorts and of no value at the north—say north of the latitude of Baltimore.

Manmoth is evidently a child of foreign parents and unsuited to general culture. Even on the grounds of the introducer and the originator, as well as at Monmouth and everywhere else I saw it, under the highest and best culture, it refused to produce more than a few scattering, ill-formed berries. I must pronounce it a decided failure.

Jewell is also a failure except on very deep, rich soil. The fruit is fine, but even with good culture there almost no plants to produce it, and these few are so feeble that they give almost no foliage to protect the fruit, which in consequence is scalded and ruined. I regret to record a failure in New Jersey.

Summit.—What is said of Jewell will apply equally to this. The fruit would be fine if one could only get it.

Crimson Cluster behaves very much the same as Jewell and Summit, enduring the unfavorable season slightly better.

Coburn.—An utter and entire failure. Ohio is also a failure—being inferior to its parent, Kentucky, both in plant and fruit, and with a pistillate blossom.

Disy.—Among the brand new sorts this is perhaps the most promising. At all events it makes a splendid showing on the grounds of Thos. G. Zane, the introducer; not only the fruit being fine but the plant is also excellent and exceedingly prolific.

Bomba.—On the originator's grounds this did splendidly considering the season. It is, however, a large, handsome berry and like all other fine sorts, demands good culture. I have watched this berry for many years, and find many merits and as yet no important defects.

Lida is perhaps the most wonderfully prolific variety yet produced and the fruit is of good size and handsome. But it is deficient in flavor, hence will not endure a dry soil or a hot dry season. In firmness it is a little lacking also, which is improved by its having a soil giving foliage in abundance. What this variety requires is a deep, rich soil and barrels of ground bone, when the yield of fine fruit will, I think, astonish even "Pomona."

Jessie is valuable. Possessing, as it does, much foreign blood, it yields somewhat to the heat and drought of the season, but the growth of plant and crop is good, the berries average large and of great beauty and high quality. To succeed with it, I plainly see, it demands good culture and soil.

Babush proves itself one of the few real good things. In vigor of plant and yield of fruit it is wonderful, even under careless culture. The fruit too, is large and handsome, specimens in many instances being enormous. Unfortunately, however, the fruit, like Col. Cheney's, to which it perhaps owes its origin—is so soft as to render it unfit for shipment. Were it not for this, and the blossom being pistillate, it would be difficult to estimate its value as a mid-summer strawberry. With these defects it is indeed a very valuable variety.

Belmont gives much disappointment. Like Bidwell, which always bids so well in growth of plant and profuse bloom, it gives but little fruit, most of which is guarded and knobby by reason of the blossom blasting. Thus it has been at Monmouth for two years and also at Mr. Zane's and Messrs. Parry's and elsewhere. I am pained to see it behave in such an unsatisfactory manner; for the fruit itself, when properly developed, is certainly very fine.

Iska.—A strong and vigorous growth of plant, splendid, and in quality, superb, but in yield so poor as to render it practically worthless. Thus it is at Monmouth and everywhere else I have seen it. This especially surprises me, as the strongest claim made for it by its originator and introducer (from whom my plants were received) is its large yield.

Gandy.—Ah! at last! Now we have it—a large, firm, vigorous, prolific and beautiful, very late strawberry. I have watched it closely in various parts of the State, and I can truly say I am more than pleased with it. I am delighted; for it has proved not only as good as its home but in some instances even better. As the saying goes, if it does not make a noise in the strawberry growing world then I shall be more thoroughly disappointed than I have yet

been in a fruit. Its lateness is hard to comprehend. When I called at Mr. Zane's, he was picking his Kentucksies they being at their height, and we could not find a fully ripe berry of Gandy although the plants were loaded with green fruit in all sizes from the blossom. At Monmouth the first berries did not ripen until almost every other sort was giving its last fruit. The lateness, firmness, vigorous growth, and endurance of plant of this are so remarkable that I do not believe anybody could describe them in a manner that would properly and fully impress them upon the reader—hence the value of the variety will not be comprehended until it has become generally grown.

Preparing the Window Garden for Winter.

To have a successful window garden during the winter requires much forethought during the summer. Now is the time to begin to prepare the plants for their winter flowering, and if a healthy, vigorous growth is obtained before it is time to take them up in the pots the chances are that satisfactory results will be had throughout the winter. Free blooming during the proper season is a sure sign of strength and healthfulness in the plants; but it should be remembered that every flower produced exhausts a certain amount of vitality from the main stalk. At the close of each flowering season the plants are in a weaker condition and unfitted to stand any heavy strain upon their strength. Nature has ordained that they should have a resting spell after the summer's labors; when it is intended that they should bloom during the winter, the rest must be taken in summer. In fact, unless the flowers are plucked back, and prevented from blooming during summer, very few and poor flowers will be had in winter. The roses are probably the most delicate plants to handle for winter window gardens, so that their foliage will be kept in health and buds strong. It is not safe to transplant rose bushes for winter blooming in the autumn, and hence it is advisable to grow the plants in pots through summer.

As soon as the flower buds appear, pinch off, and well water the bushes and manure regularly. This will send all the vitality of the bushes into branches and roots, which will become well matured and ripened by autumn. An occasional syringing is necessary to keep the foliage clean and free from all destructive insects, and all sudden changes in the atmosphere must be avoided. If the pots are taken from the house to the garden, a clear warm day should be selected for the work. If the roots and foliage are both kept in a strong vigorous condition, and the vitality of the bushes is not sapped away by the flowers, the plants ought to bloom all winter. Fuchsias which are both kept in a strong vigorous condition, and the vitality of the bushes is not sapped away by the flowers, the plants ought to bloom all winter. Fuchsias which are both kept in a strong vigorous condition, and the vitality of the bushes is not sapped away by the flowers, the plants ought to bloom all winter.

Next to fuchsias come geraniums for winter plants. They are prized by all lovers of the beautiful, and all the care devoted to them is amply repaid by the satisfaction obtained from seeing and smelling the sweet-scented blossoms. The double varieties are always the most valued; but as they do not bloom so well as the singles, it is always better to have a good supply of both on hand. The cuttings of early spring should be struck in pots, and kept in a sunny place until the time arrives for taking them indoors. They should not be allowed to bloom, but all the wood or foliage they can make will do them no harm. Sometimes calla lilies are taken out of the pots and planted in the garden bed; but usually it is safer to keep them in the pots. These should be laid on their sides in a shady position, but not so that their branches will be broken or pressed too heavily against the ground. All water should be kept from them until autumn. The plants should then be taken from the pots, the old soil shaken from the roots very carefully, and new, rich, well-manured soil put in, and the stalks freely watered. If the roots are in a good position when the plants are taken from the pots, it can be depended upon that fine lilies will be had the winter through. These are the principal flowers for the window garden, but many others, almost as beautiful, are recommended by florists, and the mode of preparing them for winter blooming is about the same. The great object in view in handling the plants is to prevent them from exhausting their vitality in the summer season, and also to force them to make as much wood as possible.—*Horticultural Times*.

Cider Vinegar. Unless near a large market it is often difficult to sell the surplus of summer and fall apples owing in great measure to their lack of keeping qualities. One good way to dispose of them is to work them into vinegar. It will not be long now before apples will begin to ripen and those who have a large number of early apple trees will find the following article from the *N. E. Homestead* suggestive and of value:

Good wholesome cider vinegar is seldom met with nowadays in a grocery. The product called cider vinegar sold everywhere is made from alcohol by distilling it with water, adding a little yeast, and exposing the mixture to the air. The last operation is best effected by causing the liquor to trickle slowly through a cake filled with beech or oak shavings which have been previously soaked in vinegar. This process is known as the quick process of making vinegar, and it is very sharp. It is reasonable to suppose that good vinegar cannot be made in this way. The best vinegar, therefore, can be made on every farm from the sugar contained in the juice of apples, and is the one in the manufacture of which farmers are interested, and which is the best for general domestic use.

When cider is exposed to air the yeast principle soon begins to operate and cause the first fermentation by which a little starch is converted into sugar, but almost simultaneously the stronger fermentations begin by which the sugar is converted into alcohol. If the temperature is low, and the cider left undisturbed, it will rest here for weeks and perhaps months. With a rise of temperature, or stirring frequently, the third

fermentation begins, called the acetic acid. The change will be slow or rapid, according to the atmospheric exposure.

If the cider fills the barrel the change will be slow; if the barrel is half full the exposure will be greater, and the change will consequently be more rapid. If this amount be stirred vigorously once a week it will be still more rapid, and if stirred once a day it will be more rapid still. These very rapidly made vinegars are always of inferior quality, having a stinging taste. No vinegar can be called a good article that has not a rich "body" and a fine aroma. It cannot be made in a hurry. A certain amount of old stock in casks thoroughly impregnated with acetic acid is necessary for its production. The older, after having passed through the fermentation which converted the sugar into alcohol and precipitated all solid matter to the bottom, or threw off when the cask was full and the bung open, is racked off into other casks. A certain quantity, say five gallons more or less, is weekly through the summer season drawn out and added to the half filled hogshead containing stock.

After the cider is added to the stock the whole is stirred vigorously. This operation may be repeated once or twice a week, or not so often during the summer, just owing to the temperature. Good vinegar cannot be made from poor water cider. Sweet apples make the best. Unfortunately very few city markets are full of poor stuff, quickly and cheaply made from whiskey and water. A little of the former mixed with a large quantity of the latter produces acetic acid very rapidly. This now greatly injures the market for pure cider vinegar.

A barrel of pure cider vinegar was offered on the market by a farmer. The grocer after tasting the vinegar would not buy it, saying that he could not sell it, as his customers wanted sharp vinegar (made out of whiskey), and consequently no sale. Hence we do not see why every farmer who owns an orchard should not only have for his own use the pure cider vinegar, but can sell to those less fortunate in the ownership of an orchard.

Hints on Growing Late Cabbage. The ground for cabbage must be manured heavily, and thoroughly prepared before setting the plants if you wish to grow a good crop. After the ground is marked for setting, apply 200 lbs. of superphosphate, 200 lbs. plaster, and 60 lbs. of salt, thoroughly mixed together, dropping a small handful in each hill, and cover several inches deep with soil. The plants should be pulled at least twenty-four hours before setting, and placed in shallow boxes containing an inch of damp soil or rotten sawdust, setting the plants up in the boxes with the roots on the soil in the box. Do not pour water on the tops of the plants, as it will make them heat and spoil; but it may be put on the roots without injury to them. The boxes of plants may be left out of doors in the light, and the roots will form on the plants in from twelve to twenty-four hours. And the plants will be in fine condition for setting whether it rains or not. The plants will do better if they are set after four o'clock in the afternoon; but I have very little loss of plants by setting any time when the field is thoroughly prepared. I use a dibber for setting plants, first making the hole with the dibber, placing the plants into the hole stick the dibber into the soil by the side of the plant, pressing the soil against the roots. The cultivator should be started in the field very soon after the plants are set, and should be run through the field once a week as long as there is room for the horse to pass through the rows without injury to the cabbages, which must be kept free from weeds by hoeing, drawing the soil towards the plants the last time hoeing.—*E. S. Goff, N. Y. Experiment Station*.

The Nursery Business in France. Mr. Irving House, in a paper read before the American Nurserymen's Convention in this city last month, gave the following account of how the business is carried on in France:

The first thing that strikes an observer is the lack of instruments considered necessary on this side of the Atlantic; no cultivators, no harrows, no plows, and no horses with which to work them. Not one nurseryman in ten owns a horse, or has any use for one. As the Irishman said, "the ground is plowed with a spade." With the assistance of mattocks, it is also cultivated with a spade. No use for tree or seedling diggers. It seems hardly credible, but the proprietor of a nursery of over 200 acres said a plow had not touched his ground in more than fifty years. As horses are not used, all the land can be utilized; no fence corners are left untended. Our deep system of cultivation is, of course, not possible; the only thing that can be done is to keep the ground clean and the surface loosened up by the use of hoes. At great expense the ground is manured very heavily; the fertilizers being carried down from the compost heaps in baskets upon the backs of the workmen. If some of our people who think they have a hard time could see women picking out manure, at 40 cents a day, for 12 hours' work, they would conclude that there were people worse off than they, and a worse country to live in than the United States. Labor is cheap, but land is high, \$1,000 per acre being the average price near the large towns. The dearness of land and the cheapness of labor account for the lack of labor-saving machinery.

A first-class standard apple tree in France must have a stem at least six feet without limbs, and it frequently has a stem ten or twelve feet in height. Cherry and pear trees are grown in the same way. The extra age and size make the price high, the ruling price being 30 cents for standard pear, 20 to 25 cents for standard apple, and 25 to 30 cents for cherries.

The tree agent and dealer are unknown in France; most of the orders being sent direct to the nurseries. A good deal of stock, however, is sold at the fall fairs. The peasants come in from the surrounding country with cart loads of trees, and the nurserymen say that the peasant seller always has on hand any sort of customer may ask for. It was the opinion of Mr. House that the temptation to substitute under the whole system is greater than under the agent and dealer plans.

The climate and soil of France produce fine fruit, and we are indebted to the French for many of our finest sorts; but neither the Frenchman, Englishman nor the German knows what it is to use fruit as we use it. In no city in Europe can so fine fruit be bought as can be found in New York, and in no country in Europe is fruit within the means of the working classes, as it is in our own.

The Banding System. W. G. Klee, State Fruit Pest Inspector, says of the banding system to catch the larvae of the codling moth, that its usefulness is based on the observed habit of the larvae when leaving the apple to seek shelter under the bark. The band about the tree provides artificial shelter for the worm, and the majority of the larvae, no doubt, find their way to it, although a sufficient number to give future trouble find other hiding places on fences, buildings etc., and keep more than anywhere else, under clods at the foot of the tree; and it is here in an old orchard that cocoons are invariably found. To band most effectively the ground of the whole orchard, and especially immediately around the tree should be thoroughly pulverized. The greatest obstacle of the success of the banding or any other system of pest destruction lies in the neglect of contiguous or near by owners in permitting their own trees to become infested, harboring the pests to fly away and spread havoc in all the neighborhood. Under the present defective law no adequate power is vested in the hands of the authorities, nor provision made for expenses to permit the thorough disinfection of orchards. It is expected, however, that this will be remedied by the next legislature. Growers are cautioned to keep careful watch upon bands in position upon trees, and destroy all larvae before they escape to become the progenitors of a later brood, otherwise the band becomes a hatching nest instead of a destroyer.—*California Fruit-Grower*.

Perfecting Cabbage Heads. A correspondent of the *N. Y. Tribune* says:

Mr. M. P. Brewer, my nearest neighbor, an authority on gardening in this region, called me this morning to the opening of a trench in which he planted worthless cabbages last fall. At that time the small plants had not begun to head, and seemed fit only for stock-feed or compost heap. Nevertheless he set them in the trench, threw a little earth around them, piled on top a lot of old tomato vines, etc., then left them to their fate. Very soon the snow came; there was a high bank over that trench all winter, and there this excellent culinary vegetable grew, headed and matured, for he found to-day a great heap of fine looking cabbages than we see in market—they were real cabbage-heads, with no rusty, sunburned leaves. Last year our late cabbage was nearly a failure; such scarcity of this general favorite has seldom been known here; hence this treasure-trove is opportune.

I tested the quality in coldslaw for dinner, and found it exceedingly good—crisp, tender and well-flavored; we thought it a little better than ordinary cabbage. Nothing can fall to be of interest pertaining to the growth, habits or peculiarities of the vegetable, which is said to be "in almost daily use throughout the civilized world." From a poor beginning it has reached its present state of perfection by slow degrees and careful selection. From an inferior stock there has been developed a wonderful progeny, as cauliflower, brussels sprouts, savor and red cabbage, with broccoli and its sorts, thus giving us a greater variety of edibles from a single species than we have obtained from any other plant, I believe, that we have found good and desirable for food.

Evaporated Raspberries. At the recent meeting of the Ohio State Horticultural Society, some of the Barnesville berry growers stated that they found the Shafter to be a valuable sort for evaporating, as the fruit lost but little more in drying than that of the black varieties and brought a better price in market. To test the matter, several trials were made with this and other well known varieties, at the experiment station. Contrary to what many would undoubtedly expect, the Shafter stands but little below the Ohio and Gregg. The two latter varied a little in different trials, but gave on an average at the rate of nine pounds of dried fruit per bushel. The best result obtained with the Shafter was eight and a half pounds per bushel, while the average was eight pounds. In one trial the fruit was dried more than necessary, as shown by the fact that other samples of each sort that was dried much less are still keeping well, although quite soft. If a bushel of Shafter berries will give within a pound as much dried fruit as will a bushel of Ohio or Gregg, and will sell for more per pound, then wideawake fruitgrowers do not need to be told what variety to plant.

Horticultural Items. The Benton Harbor *Palladium* says Grant Woodruff picked 210 quarts of cherries as a day's work during the cherry season.

Insects are injuring the grape crop in some parts of Monroe County. On sandy lands the crop will be a partial failure.

In Susquehanna Co., Pa., in 1887, over 10,000 bushels of strawberries were raised, and the average net price to growers was \$2.25 per bushel.

An Alabama melon grower raised 200 acres of melons last year, and sent 166,000 for seed. Northern seedsmen buy these seeds and their customers find they cannot grow fine melons from them.

The Orange County *Farmer* says the Gregg is a good raspberry to sell but a mighty poor one to eat. It is large and handsome but deficient in flavor and lacking in sprightliness.

Grapes are good for that mysterious disease known as malaria. Eat all you can, several pounds per day, but be sure they are ripe. There is no healthier fruit than the grape unless it be the strawberry.

J. B. HEATON, of Portage County, O., has caught over 5,000 curculionids in an orchard of 175 peach, apricot, almond and plum trees, the number varying from four on a cold morning to 800 on a hot one.

Speaking of a plant which has been recommended in some quarters as a substitute for

water-cress, *Barbarea precox*, a correspondent of the *Country Gentleman* says both it and another, *B. vulgaris*, are intolerable nuisances and should not be sold without warning of their character.

None of the remedies recommended for the peach grub, or borer, which works in the trunks of the trees, is equal to the plain practical one of "going for him" with the point of a pocket-knife, or sharpened wire, tracing the burrows in the bark to the bottom and destroying the grubs. It is a sure exterminator—for that particular grub, at least.

The largest grape-grower in Chautauque County, N. Y., lives at Westfield and owns 190 acres of vineyards. Not content with this, he will set 75 acres more the coming spring. On each thirty acres he builds a packing house, and places the tract under the care of a competent vineyardist.

W. F. MASSEY, in the *Philadelphia Press*, says: "I have never yet found any necessity for boxes or muslin covers over hills of squashes and melons. No insect in the garden is more easily driven than the striped squash bug. I grow squashes and melons by the thousand hills and easily get rid of the bugs while helping my vines. As soon as the young plants and the bugs appear I dust the hills with very fine flour of bone. The bugs go at once and the bone flour helps the growth of the melons."

A correspondent of the *Nebraska Horticulturist* who knows what he wants and is not afraid to speak up, has a good word for the Crescent strawberry. He says: "Epilure and connoisseurs say its quality is poor, execrable, etc.; that it is soft, sour, etc., while now and then one bobs up serenely, after eating a mess of big, fleshy berries, and mourns for the lost flavor of the gamey wild strawberry. Now, if the Copper-clad Crescent has not more of the gamey, piquant wild strawberry flavor in its composition than any tame strawberry ever invented, then I don't know what flavor it is. It is not large—that is not so large as a muskmelon, neither is it so soft. It is soft. That's a fact, and it is not insipid. It is soft. Who wants a strawberry that you have to crack with a hammer, or which pops and crackles in your mouth like a Little Rock candy? It will not ship. It will ship if it is picked, handled and packed properly."

The record of cures accomplished by Hood's Sarsaparilla can never be completely written. The peculiar curative powers of Hood's Sarsaparilla are unequalled by any other medicine. I take pleasure in recommending Hood's Sarsaparilla, for it has done wonders for me. I had salt rheum very severely, affecting my eye nearly my entire body. Only those who have suffered from this disease in its worst form can imagine the extent of my affliction. I tried many medicines, but failed to receive benefit until I took Hood's Sarsaparilla. Then the disease began to subside, the

Agonizing Itch and Pain disappeared, and now I am entirely free from the disease. My blood seems to be thoroughly purified, and my general health is greatly benefited." LYMAN ALLEN, Sexton N. E. Church, North Chicago, Ill.

"My son had salt rheum on his hands and the calves of his legs, so bad that they would crack open and bleed. He took Hood's Sarsaparilla and is entirely cured." J. B. STANTON, Mt. Vernon, Ohio.

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100 Doses One Dollar

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THE STANDARD BERRY PACKAGE OF THE WORLD

FRESH FLOWER SEEDS.

Six packets of choice flower seeds for \$50. 18 for \$5.00, 31 for \$1.00. Pansies, White Stocks and Verbenas, novelties of last season, 15c. per packet three for 40c. for catalogues. Roots of perennials—Phlox, Delphinium, Chinese Paeonies, Roses, Day Lilies, Honey-suckle, Trumpet Vine, White and Persian Lilies, 18 roots for \$1.25. No vegetable seeds.

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WAX is often adulterated with earth, meal, resin, etc. The two first render it brittle and grayish, and may be detected

NEW ADVERTISEMENTS.

BRIGGS' PIANOS
C. BRIGGS & CO.
5 APPLETON ST., BOSTON, MASS.
MANUFACTURERS OF
GRAND SQUARE & UPRIGHT
PIANO FORTES
GRACEFUL DESIGN • SOLID CONSTRUCTION •
MATCHLESS TONE • BEAUTIFUL FINISH.

Water! WATER! WATER! EVERYWHERE! "THE DAISY" TUBULE ACTING Well Pump

The editor of the *Canadian Bee Journal* giving his experience with foul brood says: "Last season we experimented with phenol, as did also Mr. A. I. Root, and neither had the success which would enable us to recommend it as a permanent cure. It did relieve, and to a certain extent cured, the colonies afflicted, but we could not depend upon it as lasting."

A CALIFORNIA writer in *Bee Gleanings* tells that a sick man planted a little horhound, intending to use the product in making tea for the cure of his ailment. Wind and water and sheep have scattered the seed abroad, and the plant flourishes far and near. The writer says his bees have access to it, but complains that the honey they make is strong, dark, granulates easily and is bitter. He offers his honey at five cents a pound. Possibly the horhound honey may be utilized by horhound candy makers, and for medicinal syrup with that flavor.

NEW ADVERTISEMENTS.

Salt Rheum

The agonies of those who suffer from severe salt rheum are indescribable. The cleansing, healing, purifying influences of Hood's Sarsaparilla are unequalled by any other medicine. I take pleasure in recommending Hood's Sarsaparilla, for it has done wonders for me. I had salt rheum very severely, affecting my eye nearly my entire body. Only those who have suffered from this disease in its worst form can imagine the extent of my affliction. I tried many medicines, but failed to receive benefit until I took Hood's Sarsaparilla. Then the disease began to subside, the

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Poetry.

AT THE PLAY.

A pretty comedy of love to-night,
And all the house is gay with flowers and light;
There is a hint of passion in the plot,
Of love that's lightly won and soon forgot—
An old, old play.

But ah! my lady, though you sit and smile,
I see your eyes steal, darkling all the while,
To where a brown head bends above a gold,
With all the grace it bent o'er yours of old.
When at the play.

The scene goes on, with music and the dance,
But all she marks, with sidelong, furtive glance,
How tenderly he bends him down to say
Some earnest words, in just the sweet old way—
It is the play.

His heart-beats stir the filmy fall of lace;
She lifts her fan as though her palm she trace,
And turns to answer merry jest with jest,
With all the while a strange weight on her breast—
A bitter play.

The curtain falls; the comedy is done;
The music fades; the lights die one by one;
My lady sees with what protecting care
Do strong hands ward a slight form from the air
After the play.

Within her weary eyes a dull fire burns,
Yet smiles she still as to her friends she turns;
And why her lips are white she cannot guess,
Nor why her small hands tremble so—unless
Too long the play.

THE SKIN WE WIND.

If you and I to-day
Should stop and lay
Our life-work down, and let our hands fall where
they will—
Fall down to the quite still!

And if some other hand should come and stoop
to find
The threads we carried so that it could wind,
Beginning where we stopped; if it should come
to keep

Our life work going, seek
To carry on the good design
Distinctly made yours or mine,
What would it find?

If love should come,
Stepping above, when we are done,
To find bright threads
That we have laid, that it may spin them longer,
And bid us shroud

That break when touched, how cold,
Sad, shivering, portionless, the hands will
hold
The broken strands, and know
Fresh cause for woe.

—Boston Commonwealth.

Miscellaneous.

THE RUNAWAYS.

The same year that Lady Jane Magnus presented her beautiful daughter, Adela Lord Glenore was the match of the season. Just of age, of an old family, with vast possessions, and a heavy rent roll, swelled by a long minority, the instant the hawk-like eye of Lady Jane fell on the young peer a thrill of joy assured her that there stood the husband Providence had provided for Adela.

Little mattered it to Lady Jane that Lord Glenore was silent, awkward, most painfully shy, given to blush to the very roots of his hair if a woman but addressed the most commonplace remark to him. Adela had been too carefully trained to pin her faith to externals. Besides, as regarded marriage, Lady Jane always arranged these little affairs for her daughters. She had brought out three before the advent of the lovely Adela, and not one of them, she inwardly boasted, had ever reason to fling a syllable of reproach at their mother.

"You think it is all right, mother, do you?" Adela ventured to say, growing a little uneasy when the end of the season drew near, and Lord Glenore had never addressed a single remark to her which could by any possibility be construed into love.

"Perfectly right, dear. The society papers have coupled your names together; an approaching marriage has more than once been hinted at, and, as a matter of course now, wherever people ask us, he is asked."

"I know; still other people are not the same as he."

"Quite the same, I understand the position perfectly well, my love. Men of his kind would remain silent until doom-day unless a suggestion was made to them."

"Well, but—"

"Dear child, you may leave it to me. Don't you think so?" And an expression of mild reproach was shot from the maternal eye. "Do you fancy that, if I saw the slightest shadow of uncertainty, I should accept Sir Jocelyn's invitation for Goodwood, knowing that Glenore won't be there?"

"Won't he? Why, where is he going?"

"Nowhere. I ascertained that, you may be sure. He is obliged to remain in town. There'll not be a soul left for him to speak to. Some business with his lawyers, he said—and said it in a very pointed way, too."

"Stammering and getting fiery red," said the would-be fiancée, disdainfully.

Lady Jane shook her head. "Never mind the manner, it is the meaning we are concerned in. He joins us immediately after at Thorndon. There you will see that everything will be satisfactorily arranged. Lady Somerset has such a happy way of letting young people be thrown together, and from the first I have seemed to be very much guided by her."

Adela embraced her mother with grateful effusion.

"How clever you are!" she said, admiringly; "you have managed beautifully, for I did want to enjoy Goodwood free. When I am a countess, mamma, it shall be very nice for you."

Certainly Goodwood week had left London wonderfully empty. You did not meet a soul you knew.

Lord Glenore repeated this fact to himself most cheerfully, as he walked alone, Picoletti with a heart and a step as light as a bird's.

It seems an impossible circumstance that a stalwart young giant, standing over six feet in his stockings, his own master, able to do what he likes and go where he chooses, should be in subject to a plain

little middle-aged woman who was bent on compelling him to marry her daughter. "And I feel as if I should be made to do it too," poor Glenore had said of late, driven into all Lady Jane's friends, to say nothing of those horrid paragraphs in those horrid papers, some of which had gone so far as to mention an early date being fixed "for the marriage of a lovely debutante of this season and a young Earl recently of age, whose ancestors came over with the Conqueror." Glenore had it in his heart to envy the shopmen, the cab drivers, the crossing sweepers—to envy any one not singled out by Lady Jane Magnus to be her son-in-law.

If he could only pluck up courage to say he did not mean anything, never meant to mean anything—that he was quite happy as he was—that he never intended to marry any one—that would never give! But in face of that terrible Lady Jane and her lovely statuesque daughter he felt paralyzed and filled with an abject conviction that he would have to succumb. If he had only one idea to confound in, some one whose advice he felt was given for his good! By the poor young fellow stood, as the possessors of vast properties often do, absolutely friendless and alone. His kindly, simple nature was despised by those around him. Without parents or any near relatives, he had been brought up by strangers, who had surrounded him with such unnecessary cares and ridiculous precautions that now, when he was a man, with full liberty given, he was no more able to make good use of it than a grown-up baby would be.

Full of a wild scheme which had lately come to him, that he would run off to some far-distant country, he was mapping out the details as he walked along, so occupied that he forgot how far he had come, until with a sudden start he pulled himself up. He was passing the Albert Hall, close to that pleasant row of houses in one of which lived Lady Jane.

The knowledge that he could walk boldly by and fling a look of defiance at the papered windows and closed shutters—as he had done the day before—sent a thrill of satisfaction through the young man. He drew himself up and turned his head to—when, oh agony! exactly as he was opposite to it the door opened, and a voice called out "Glenore!"

"Freddie! Is it you?" Lord Glenore managed to say, seeing he was addressed by a weasel-faced young gentleman between sixteen and seventeen.

"Why, how came you here? Is-s-s your mother—Lady Jane—with you?"

Freddie's eyes were apparently so educated that in order to give full expression to one he was forced to shut the other, and regarding Lord Glenore through this single optic, he said: "You bet if she was, I shouldn't be here."

Glenore's heart seemed restored to its native position. "I'm very glad to see you," he said, closing his hand over the little fin Freddie had extended to him; "it's quite a surprise to me."

"Here, I say," said the astute Freddie, significantly. "What's up? How is it you ain't down there with them?"

"Well, I couldn't—I have—that is—there is some business for me."

Freddie's eyelid went down like the cover to a box.

"Exactly; just so," he said, airily, putting his thumbs into his armpits. "My case all over. I'm at my tutor's, you see, so please to remember that it isn't possible for you to have seen me."

Glenore laughed cheerily. "All right," he said; "you are quite soft with me—but what on earth are you up to?"

This question seemed prompted by the sight of a nondescript dog cart just led up to the door. "Are you all by yourself here?"

"There's Harris, my old nurse, and Jim, her husband—our butler he used to be—and Peggy. You know Peg, don't you?"

"Peg! No, I don't think I do."

"I say," exclaimed Freddie, "isn't it a shame the way they always try to shunt her? and she's just as good as anybody. Her father was my father's eldest son, only he married his tutor's daughter, and my lady set the governor on to cut up rough about it. So the poor chap got the kick-out, and then he died, and so did his wife, and a jolly good thing for me, too, or I should have had to sing solo. Only wait till I'm master, though, and if they try it on Peggy then I'll let them know. She's older than I am, but all the same, I'm her uncle, and—I say, you'll be her uncle too, if you marry Adda, and you're going to, ain't you?"

Lord Glenore blushed furiously, and Freddie, taking silence for consent, added with a snort of supreme contempt, "It's a jolly good thing for her I ain't you. Catch me marrying Adda! Oh yes, rather!"

Not desirous of pursuing this topic further, Lord Glenore put a question.

"You're not going to drive that," he said, nodding toward the horse, a most vicious looking screw. "are you?"

"Why not? he's a real good one to go. Come in and see us start; it's capital fun. We'd a regular crowd round us yesterday. Any one else but Peg would have been frightened to death."

Inclined by curiosity, Lord Glenore obeyed Freddie's invitation.

"We keep all the front well shut," said Freddie, as he marshaled the way to a den at the far end of the narrow hall. Passing the stairs he gave vent to a shrill whistle, answered by a similar one which might have been taken as his echo.

"Ain't you ready?" was piped up from below.

"Coming," answered a girl's voice, and at the same instant with the word, down the flight of stairs, top on the mat, came a figure which, through the cloud of dust sent up, Lord Glenore surmised must be Peggy.

"I'm so sorry. I thought it was only Freddie—I— and then, better able to see who stood there, she gave vent to an agonized "Oh, Lord Glenore!" and seemed unable to say more.

And once don't you remember when the door opened and I scuttled off and your frock caught and you tumbled down. Oh, I say, what a game! It was a shaver we weren't caught that time."

Poor Peggy's face was like a beet root. "There wasn't anything to see," she said to Lord Glenore, reassuringly; "I really wasn't for that we looked, but I—I was so curious to know what you were like," and she gesticulated violently to Freddie behind Lord Glenore's back.

"What's the harm?" responded the young gentleman, expostulatively. "You'd do the same if you were packed off into a cockloft of a garret, wouldn't you? That's what they do with her—stick her anywhere out of the way."

"No, Freddie, no," Lord Glenore from out the corner of his eye saw her say, and hoping to change the conversation, he said:

"I'm afraid I'm making you lose the best of the day. I came in to see you start." Perhaps Peggy fathomed his kind effort, for she looked at him fairly for the first time.

"Yes?" and she gave him a little shy smile. "Did you?"

"It's very pleasant, a drive out of town now. Where are you going?"

"To Richmond Park," answered the irrepressible Freddie; "would you like to go, too? We'll take you; there's heaps of room behind. Why—why shouldn't he?" This was evidently in answer to some pantomime from Peggy.

"You don't want me—would rather I didn't go?"

Lord Glenore had turned suddenly round and was asking this question of the young girl.

"Oh, no; it isn't that, only I'm afraid—"

and here Peggy stopped and blushed furiously. For a wonder Glenore did not catch the complaint. Quite persuasively he said, "But do let me; it's what I should so enjoy."

There was an instant's pause, and then they all began laughing; and good fellowship being thus established, some twenty minutes later the three, Lord Glenore behind, Freddie driving, and Peggy by his side, were on the road to Richmond.

III.

It might be tedious to detail all the folly that fell from the lips of this trio as under Freddie's guidance they pursued their way. Their untired years did not make up the sober age of sixty, and they had the spirits of schoolboys out for a holiday. Lord Glenore had never felt so much at ease before; none of those who in society knew him would have recognized him as the same shy individual. The hours flew like minutes. It was five o'clock when they thought it three; and then to have occurred to anybody, only that Peggy, heaving a tremendous sigh, had supposed it would soon be time to think of returning home.

The horse that was so good at going, we have omitted to state, had at a certain small hostelry, "Goat and Compass" by name, shown signs of rebellion. Stir from that door he would not, and Lord Glenore, to cut short the difficulty, had proposed that they should leave the brute there to get a feed, while they took a stroll in the park.

Returning from this walk they passed the "Star and Garter."

"I say, a dinner in there wouldn't be half bad fun," said Freddie.

"Oh, I don't think so," replied Glenore.

"Why, have you ever been there?"

"Yes, I dined there twice this season with Lady Jane and your sister."

And a chill ran through the young man as he recalled the dreariness of those solemn orations.

"Oh!" said Freddie, drawing in his back as if about to succumb, while Peggy burst out laughing.

A bright inspiration came suddenly to Glenore.

"Why shouldn't we stop here now," he said, "have dinner, and go home after?"

Freddie and Peggy came to a sudden standstill, absolutely dumb with the brilliancy of the proposition.

"That's what we'll do," continued the enthusiastic Glenore; and he made as if to turn in at the door, but Peggy stopped him.

"I don't think we can," and she looked at Freddie, significantly.

"No," came the answer, a trifle crestfallen. "I expect they wouldn't stand tick in there," was added by way of explanation.

"That isn't of any consequence to you," exclaimed Glenore. "It's as my guests I invite you. Think how often your mother has entertained me."

"Oh, I'm not proud," laughed the delighted Freddie. "Isn't this first-rate, Peg? Come on."

But Peggy still hesitated.

"I don't know whether I ought—whether it's quite right with you," and though her face was turned to both, her eyes were fixed on Glenore.

"And if your uncle that is," exclaimed Freddie. "and he going to be. Shut up, do."

And considering this speech to be conclusive, Freddie cut short further discussion by at once turning into the hotel.

And was, like her, lonely, with no one to care for him.

"Yes," said she, "but you're a man with lots of money, and I'm poor and dependent; and then it's horrid to be a girl. Ever since I can remember I've heard nothing else but all I owe to everybody, as if it was my fault that I owe anything to them. I can't help having been born. Here I am, and until I die here I must stay. Not dependent, though. I've only waited to be taught something. I've had to owe that much to grandmamma."

Lord Glenore remained silent, and thinking that probably her troubles were of no interest to him, Peggy changed the subject. Directing his attention to Freddie, now silently sleeping, she managed to prop the lad up into a more comfortable position, and assented to Lord Glenore's remark that he did not seem like the rest of the family.

Then silence fell on them, and for a time not a word was spoken. Suddenly, as if from out of what she was thinking, Peggy said abruptly:

"Are you very much in love with Adda?"

"I'm not in love with her at all."

"But you're going to marry her?"

"Who says I am?"

"Why, everybody; and grandmamma, I know, means you to."

"I see, and that makes you think it quite certain?"

Peggy laughed contemptuously. "It wouldn't make it certain with me," she said, "but men seem different; what she chooses they do. Oh, I haven't patience to think of it, and the great brown eyes she turned on Glenore sparkled indignantly.

"Why, do you think, unless I loved somebody dearly, I'd marry him to please grandmamma? Never! She knows that as well as I do. She may ill-treat me, but she can't make me do what I won't. I'd die rather. Still I tell you what I mean to do!"—

"I mean to run away. You'll promise me not to tell any one, won't you? I mean to go very soon now—I can before they come home. Other girls earn their own living, so why shouldn't I? I'm not stupid, and I'm awfully strong."

"Oh, I know, but that I don't mean to tell. Perhaps I oughtn't to have said a word about it to you, but it slipped out, and you won't betray me, will you? most of all, don't breathe a word to Adda; she hates me, and—well, there's no disguising it—I hate her. When I'm married to her—"

"Which I never shall be," interrupted Lord Glenore decidedly. Peggy faced round and looked her surprise at him.

"Don't look like that at me," he said hastily; "I mean what I say."

"You do? Oh, I am awfully sorry."

"For her or for me?"

"I don't think I was thinking of either of you. It was for myself—there's so few ever care to be kind to me."

"And you think I should be?"

Peggy didn't trust herself to speak, but her head nodded assent.

"Let me tell a secret to you, Peggy,"—he quite unconsciously called her by her name. "Do you know that I mean to run away too?"

"You?"

"Yes; only I want somebody to run away with me. Can you guess who?"

"No."

"Somebody I've seen to-day."

"To-day?"

The eyes of each looked into the other's questioningly.

"Can't you guess who?"

Lord Glenore's voice came tremulously.

"Oh, you know," he said, "I see you do."

"Me!" Peggy spoke the word breathlessly.

"Yes, you. You will go, won't you? You've no one to care for you, and I have nobody to care for me. Why shouldn't we care for each other? I'd try and make you happy, and I'd certainly be good to you, and in time you might get to—well, to like me, you know."

"In time? Why, I like you now."

"You do? Oh, Peggy!"

"Say! What's up with you two?"

It was Freddie speaking—Freddie, whose very existence they had forgotten, but who, in common with all sleepers, awoke at the very moment he was not wanted to.

And was, like her, lonely, with no one to care for him.

"Yes," said she, "but you're a man with lots of money, and I'm poor and dependent; and then it's horrid to be a girl. Ever since I can remember I've heard nothing else but all I owe to everybody, as if it was my fault that I owe anything to them. I can't help having been born. Here I am, and until I die here I must stay. Not dependent, though. I've only waited to be taught something. I've had to owe that much to grandmamma."

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"Oh, you know," he said, "I see you do."

"Me!" Peggy spoke the word breathlessly.

"Yes, you. You will go, won't you? You've no one to care for you, and I have nobody to care for me. Why shouldn't we care for each other? I'd try and make you happy, and I'd certainly be good to you, and in time you might get to—well, to like me, you know."

"In time? Why, I like you now."

"You do? Oh, Peggy!"

"Say! What's up with you two?"

And was, like her, lonely, with no one to care for him.

"Yes," said she, "but you're a man with lots of money, and I'm poor and dependent; and then it's horrid to be a girl. Ever since I can remember I've heard nothing else but all I owe to everybody, as if it was my fault that I owe anything to them. I can't help having been born. Here I am, and until I die here I must stay. Not dependent, though. I've only waited to be taught something. I've had to owe that much to grandmamma."

Lord Glenore remained silent, and thinking that probably her troubles were of no interest to him, Peggy changed the subject. Directing his attention to Freddie, now silently sleeping, she managed to prop the lad up into a more comfortable position, and assented to Lord Glenore's remark that he did not seem like the rest of the family.

Then silence fell on them, and for a time not a word was spoken. Suddenly, as if from out of what she was thinking, Peggy said abruptly:

"Are you very much in love with Adda?"

"I'm not in love with her at all."

"But you're going to marry her?"

"Who says I am?"

"Why, everybody; and grandmamma, I know, means you to."

"I see, and that makes you think it quite certain?"


Peggy laughed contemptuously. "It wouldn't make it certain with me," she said, "but men seem different; what she chooses they do. Oh, I haven't patience to think of it, and the great brown eyes she turned on Glenore sparkled indignantly.

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